REMARKS

I. Introduction

Claims 1 to 8 and 10 to 21 are pending in the present application. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejection of Claims 1 to 8, 10, and 18 to 20 Under 35 U.S.C. § 102(b)

Claims 1 to 8, 10, and 18 to 20 were rejected under 35 U.S.C. § 102(b) as anticipated by German Published Patent Application No. 199 57 169 ("Laermer et al.") as evidenced by U.S. Patent No. 6,077,787 ("Reinhard et al."). It is respectfully submitted that Laermer et al., as evidenced by Reinhard et al., does not anticipate the present claims for at least the following reasons.

As an initial matter, it is respectfully submitted that the machine-generated translation of Laermer et al. does not constitute prior art against the present application, since that machine-generated translation bears a date of August 16, 2007. Furthermore, the machine-generated translation is replete with errors and/or mistranslations. See, e.g., page 3, last para. (referring to "Spannungsamplitude"). Accordingly, an accurate English translation of Laermer et al. is respectfully requested, as required pursuant to M.P.E.P. § 706.02 ("If the document is in a language other than English and the examiner seeks to rely on that document, a translation ***must*** be obtained so that the record is ***clear*** as to the ***precise*** facts the examiner is relying upon in support of the rejection." (Emphasis added)).

Laermer et al. relate to a method for plasma etching with pulsed substrate electrode power. Nowhere do Laermer et al. disclose refraining from injecting a high-frequency power into the etching body via a substrate electrode if an at least approximately ambipolar plasma is present, as required by claim 1, or modulating the intensity of the plasma as a function of time, as required by independent claim 7. Nor do Laermer et al. disclose injecting a first pulse train into the etching body via a substrate electrode, injecting a second pulse train into the plasma for modulating a plasma intensity over time, wherein a fixed, integral phase ratio exists between the first pulse train and the second pulse train, as required by independent claim 4.

Other than generally stating that the plasma source produces a high-density plasma made of neutral radicals and electrically charged particles (ions), Laermer et al. simply do not discuss the plasma, let alone ***when the plasma has reached an ambipolar state***, as required by independent claim 1, ***modulating the intensity of the plasma*** over time, as required by independent claim 7, or ***establishing a relationship between power delivered to the plasma and power delivered to the etching body***, as required by independent claim 4. Nor do Laermer et al. state that the generator unit 30, used to produce the high-frequency-pulsed high-frequency power coupled into substrate electrode 12 and etching body 18, is controlled so as to assure that ***power is not injected into the etching body via a substrate electrode if an at least approximately ambipolar plasma is present***, or is in any manner coordinated with a generator used to deliver power to the plasma.

The Office Action states at page 2 that "Laermer et al. teach low frequency and high-frequency with respective pulse break (specifically page 4, paragraphs 4-5), which reads on the claimed limitation of refraining the high-frequency power at least approximately ambipolar plasma is present." The Office Action continues at pages 2 to 3 to assert that "Laermer et al inherently teach the presence of at least approximately ambipolar plasma, which is evidenced by Reinhard et al. Reinhard et al teach that the etch uniformity follows an ambipolar diffusion during etching a substrate using plasma reactor (col.5, lines 7-12)."

As an initial matter, to rely on inherency, the Examiner must provide a "basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied art." (See M.P.E.P. § 2112; emphasis in original; and see *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int'f. 1990)). Thus, the M.P.E.P. and the case law make clear that simply because a certain result or characteristic may occur in the prior art does not establish the inherency of that result or characteristic.

Reinhard et al. states that "[e]tching uniformity follows [an] ambipolar diffusion model, and is therefore determined by downstream distance and the size of the aperture 2b of the reactor." Col. 5, lines 11 to 14. In this regard, Reinhard et al. do not assert that ***all*** plasmas ***necessarily*** include ambipolar plasma -- rather, Reinhard et al. only purport that the etching uniformity of the specifically disclosed

etching system follows an ambipolar diffusion model. Accordingly, Reinhard et al. do not evidence that Laermer et al. inherently disclose an ambipolar plasma.

Notwithstanding the foregoing, even if it is assumed, *arguendo*, that Laermer et al. inherently disclose some ambipolar plasma, Laermer et al. do not disclose, or even suggest, ***refraining from injecting a high-frequency power into the etching body via a substrate electrode if an at least approximately ambipolar plasma is present***.

The Office Action further relies upon Figures 1a to 1c and states that Laermer et al. modulate the intensity of the plasma between a maximum and minimum value. However, ***Figures 1a to 1c show the power delivered to the substrate electrode 12 and/or etching body 18 -- not the plasma***. See, e.g., machine translation of Laermer et al. at page 3, fourteenth para. ("In order to produce ***into the substrate electrode*** 12 and over it into the ***corroding body*** [i.e., etching body] 18 linked, high frequency pulsed the high frequency achievement, it is first intended that the high frequency generator 33 in the generator unit 30 prefers a ***high frequency carrier signal 54***.") (emphasis added) and Figures 1a to 1c (showing signal 54, which is included within pulses 52, which are included in pulses 50).

As indicated above, Laermer et al., as evidenced by Reinhard et al., do not disclose, or even suggest, all of the features recited in any of claims 1, 4, and 7. As such, Laermer et al., as evidenced by Reinhard et al., do not anticipate any of claims 1, 4, and 7.

As for claims 2, 3, and 18 to 20, which ultimately depend from claim 1 and therefore include all of the features of claim 1, and claims 5 and 6, which ultimately depend from claim 4 and therefore include all of the features of claim 4, and claims 8 and 10, which depend from claim 7 and therefore include all of the features of claim 7, is respectfully submitted that Laermer et al., as evidenced by Reinhard et al., do not anticipate these dependent claims for at least the same reasons given above.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

III. Rejection of Claims 11 to 15 Under 35 U.S.C. § 103(a)

Claims 11 to 15 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Laermer et al., as evidenced by Reinhard et al., and U.S. Patent No. 5,290,383 ("Koshimizu"). Applicants respectfully submit that the combination of Laermer et al., as evidenced by Reinhard et al., and Koshimizu does not render unpatentable claims 11 to 15 for at least the following reasons.

Laermer et al. relate to a method for plasma etching with pulsed substrate electrode power. Koshimizu purportedly relate to a plasma-process system with an improved end-point detecting scheme. Nowhere does the combination of Laermer et al., as evidenced by Reinhard et al., and Koshimizu disclose, or even suggest, ***at least at one time at which an at least approximately ambipolar plasma is present***, adding to the plasma an inert gas that is at least one of light and easily ionizable, as required by independent claim 11. The Office Action refers to col. 14, lines 29 to 41, where Koshimizu states that certain gases are introduced into the etching chamber prior to application of power to the electrodes 106 and 108. However, Koshimizu does not state that these gases are introduced at a time when at least approximately ambipolar plasma is present in the chamber. On the contrary, in Koshimizu the gases are introduced even before generation of the plasma in the chamber. See col. 14, lines 43 to 47.

As indicated above, the combination of Laermer et al., as evidenced by Reinhard et al., and Koshimizu does not disclose, or even suggest, all of the features of independent claim 11. As such, it is respectfully submitted that the combination of Laermer et al., as evidenced by Reinhard et al., and Koshimizu does not render unpatentable claim 11.

Claims 12 to 15 ultimately depend from claim 11 and therefore include all of the features recited in claim 11. As such, it is respectfully submitted that the combination of Laermer et al., as evidenced by Reinhard et al., and Koshimizu does not render unpatentable these dependent claims for at least the same reasons set forth above in support of the patentability of claim 11.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

IV. Rejection of Claims 16 and 17 Under 35 U.S.C. § 103(a)

Claims 16 and 17 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Laermer et al., as evidenced by Reinhard et al., and U.S. Patent No. 5,779,925 ("Hashimoto e al."). Applicants respectfully submit that the combination of Laermer et al., as evidenced by Reinhard et al., and Hashimoto et al. does not render unpatentable claims 16 and 17 for at least the following reasons.

Hashimoto et al. purportedly relate to plasma processing with less damage. The Office Action alleges that Hashimoto et al. disclose that the RF bias is synchronized with the on/off modulation in order to reduce charging damage without lowering the throughput. However, nowhere does the combination of Laermer et al., as evidenced by Reinhard et al., and Hashimoto et al. disclose, or even suggest, the specific relationship between the plasma pulse frequency and the power injected into the etching body required by independent claim 16, *i.e.*, setting as a plasma pulse frequency an odd-numbered multiple of a frequency of a low-frequency modulation of a high-frequency power injected into the etching body via a substrate electrode, and synchronizing the first modulation and the low-frequency modulation with one another so that n plasma pulses (n = 1, 2, 3, ...) fall in each pulse injected into the etching body using the substrate electrode while n + 1 plasma pulses occur during a pause in an energy injection into the etching body.

As indicated above, the combination of Laermer et al., as evidenced by Reinhard et al., and Hashimoto et al. does not disclose, or even suggest, all of the features recited in claim 16. As such, the combination of Laermer et al., as evidenced by Reinhard et al., and Hashimoto do not render unpatentable independent claim 16.

Claim 17 depends from claim 16 and therefore includes all of the features recited in claim 16. As such, it is respectfully submitted that the combination of Laermer et al., as evidenced by Reinhard et al., and Hashimoto does not render unpatentable claim 17 for at least the same reasons set forth above in support of the patentability of claim 16.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

V. Rejection of Claim 21 Under 35 U.S.C. § 103(a)

Claim 21 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Laermer et al., as evidenced by Reinhard et al., and U.S. Patent No. 4,799,991 ("Dockrey"). Applicants respectfully submit that the combination of Laermer et al., as evidenced by Reinhard et al., and Dockrey does not render unpatentable claim 21 for at least the same reasons submitted above in support of the patentability of claim 1, from which claim 21 depends. Specifically, Applicants respectfully submit that the combination of Laermer et al., as evidenced by Reinhard et al., and Dockrey does not disclose, or even suggest, ***refraining from injecting a high-frequency power into the etching body via a substrate electrode if an at least approximately ambipolar plasma is present***, as required by claim 1. Dockrey purportedly relates to a process for differentially etching polycrystalline silicon. Dockrey does not remedy the above-noted deficiencies of Laermer et al., as evidenced by Reinhard et al. Nor is Dockrey relied upon for remedying the above-noted deficiencies of Laermer et al., as evidenced by Reinhard et al. Therefore, withdrawal of the present rejection is respectfully requested.

VI. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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